



Better Than Nothing Mobile IPv4 Fast Handovers

**draft-doswald-robert-mip4-btn-
fmipv4-00**

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Introduction

Current fast handover protocols (RFC 4881 and RFC 4988) present a solution using the presence of Foreign Agents (FA) in the source and target networks.

However cases arise where FAs are not, and will not be present (such as the project I'm currently working on).

In such cases, the Mobile Node (MN) must rely on the Home Agent (HA) to provide faster handovers.

→ Proposed solution is a complement to RFC 4881 and RFC 4991 using the HA when no FA is present



Basic protocol

Home Agent:

- Processes Fast Handover messages, can buffer information during Handovers, or forward it to a new Foreign Agent (nFA)
- Keeps a dynamically updated list of Access Point (AP) - FA associations
- Keeps a default buffer in case of a reactive handover



Basic protocol (2)

Three scenarios:

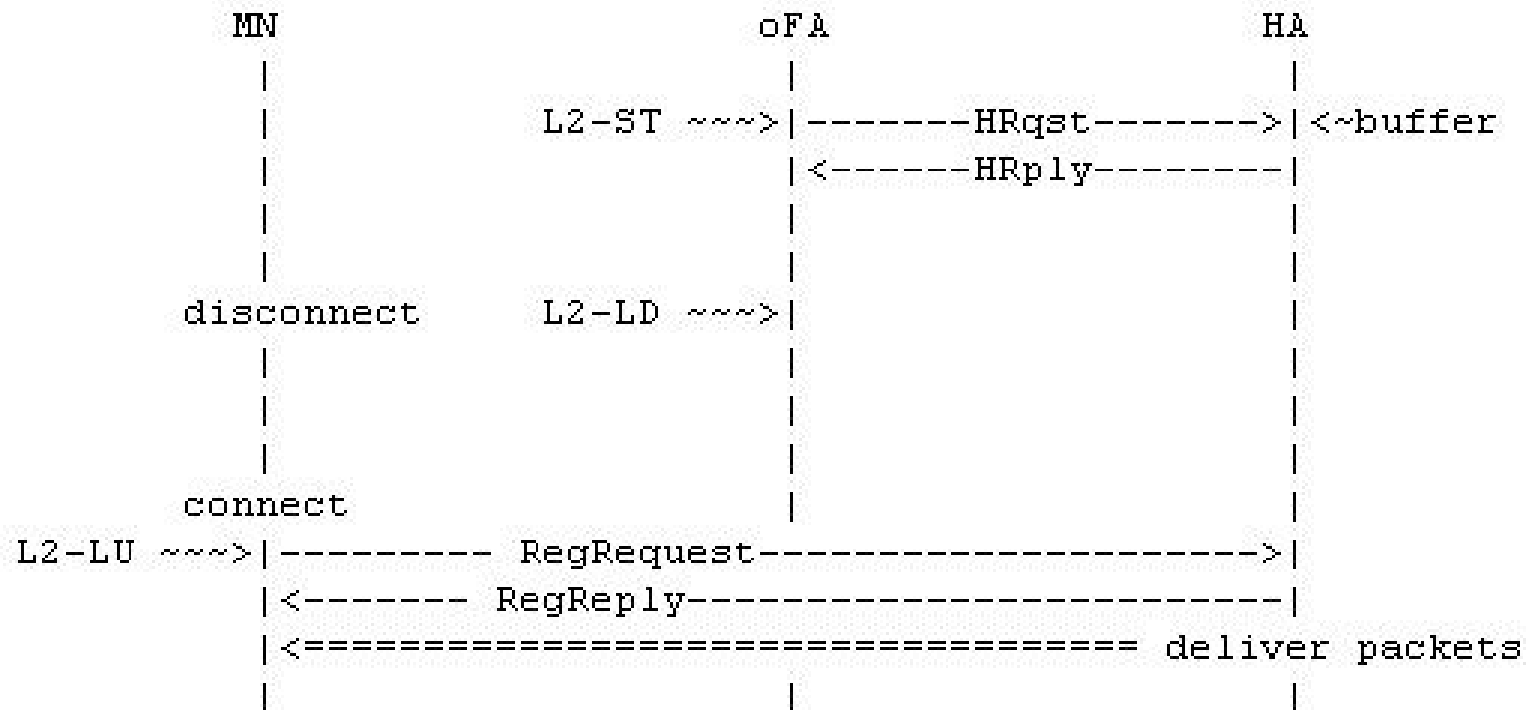
- MN moves from a Network with a fast handover enabled FA (NwFA) to one without (NwoFA)
 - The old Foreign Agent (oFA) has no AP-nFA information for new network
 - MN or oFA sends buffer request to HA
 - Upon handover completion, buffer is tunnelled to MN
- MN moves from a NwoFA to another NwoFA
 - More or less same as previous scenario
- MN moves from a NwoFA to an NwFA
 - HA has info that next network has a nFA, forwards data to it during handover



Combination with RFC 4881

- RFC 4881 relies on two systems, PRE-REGISTRATION and POST-REGISTRATION
- “Normal” pre-registration only possible when moving to a NwFA, but when moving to a NwoFA, the registration message can be sent to the HA to start buffering
- Post-registration normally only possible when both oFA and nFA are present. We propose that the oFA can use post-registration messages to ask the HA to buffer, and the nFA can ask the HA to direct traffic to it in advance

Example with RFC 4881 messages: NwFA to NwoFA

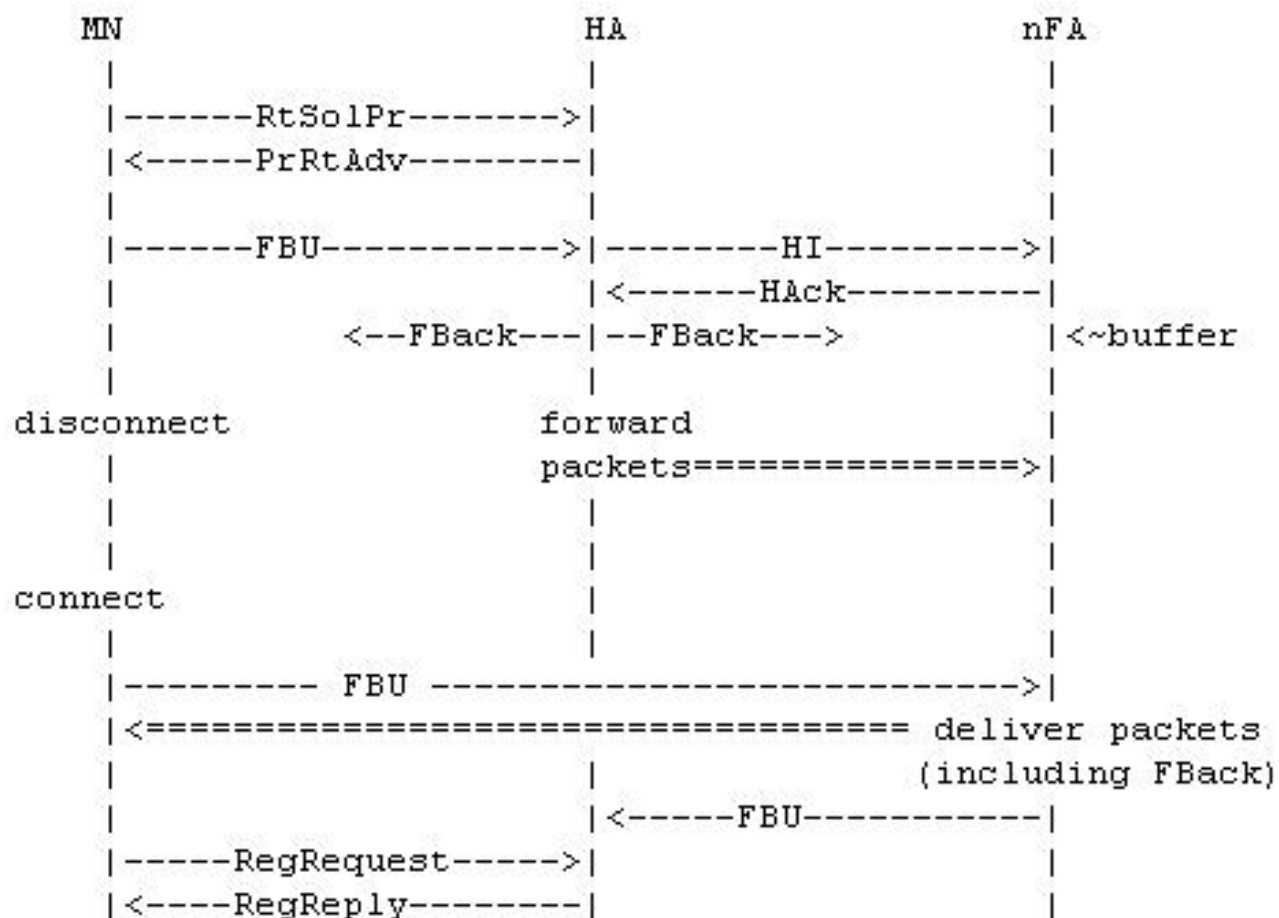




Combination with RFC 4988

- RFC 4988 provides a single system that:
 - Allows the MN to pre-acquire an IP
 - Forwards data from the oFA (PAR) to the nFA (NAR)
- When moving to a NwoFA,
 - If an oFA is present, a FBU is sent to it. The oFA then continues the fast handover sequence with the HA, which buffers.
 - Otherwise the FBU is sent directly to the HA, which buffers
- When moving to a NwFA, the HA takes the place of an oFA, forwarding messages to the nFA

Example with RFC 4988 messages: NwoFA to NwFA





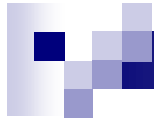
Security concerns and other difficulties

- The HA must dynamically create its list of AP-FA as the MNs visit them for the first time. But there must be a security association between HA and FA (as between FAs). Possible solutions are:
 - A public key/certificate system
 - CARD protocol (RFC 4066), deals both with creating the list, and creating the security association
- NATs are problematic... FAs need to be reachable at a public address
- Buffering has issues, not ideal for all communication (i.e. “real time”)



Future Work

- Implementation and tests (I'm modifying Dynamics Mobile IP for that purpose)
- Modify draft based on findings and comments



Thank you for listening

Any questions or comments?